

REMARKS

The enclosed is responsive to the Examiner's Office Action mailed on September 29, 2006.

At the time the examiner mailed the Office Action, claims 1-8 were pending. By way of the present response, the Applicant has: 1) amended claims 1, 2, 5, and 6; 2) canceled claims 4 and 8 without prejudice; and, 3) not added any claims. No new matter has been entered. Claims 1-3 and 5-7 remain pending. The Applicant respectfully requests reconsideration of the present application and the allowance of all claims as presented.

OBJECTIONS TO THE DRAWINGS

In the Office Action mailed on September 29, 2006, The Examiner objected to the drawings under 37 C.F.R. § 1.84(d), (h)(2), (u) for minor informalities. Accordingly, the Applicant has amended Figures 6A (Cont.) and 7B (Cont.) to re-label the aforementioned figures as Figures 6F, 7C, and 7D, respectively. Replacement sheets of the drawings at issue are submitted herewith. Further, the relevant portions of the specification have been amended to reflect the above amendments to the figures. It is respectfully submitted that the amendment has overcome the objection and withdrawal of which is respectfully requested.

Amendments to Drawings:

The drawings have been objected to under 37 C.F.R. § 1.84(d), (h)(2), (u). Accordingly, Applicants have amended Figures 6A (Cont.) and 7B(Cont.) to re-label them as Figures 6F, 7C, and 7D, respectively. Replacement sheets of the drawings at issue are submitted herewith. It is respectfully submitted that the amendment has overcome the objection and withdrawal of which is respectfully requested.

CLAIM REJECTIONS

In the Office Action mailed on September 29, 2006, the Examiner rejected claims 1-8 on the ground of non-statutory double patenting over claims 1-30 of U.S. Patent No.6,909,330. Accordingly, a terminal disclaimer in compliance with 37 C.F.R. §1.321(c) is submitted herewith to overcome the rejection. Withdrawal of the rejection is respectfully requested.

Rejections under 35 USC § 101

In the Office Action mailed on 9/29/2006, the Examiner rejected claims 1-8 under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. See, Examiner's Office action mailed 9/29/2006, pp. 4-5. In response, the Applicant has amended independent claim 1 to recite (emphasis added):

executing software instructions using a processor to develop a more detailed description of a phase lock loop system by substituting, into a monomial or posynomial equation that is part of a family of monomial and posynomial expressions that describe functional characteristics of said PLL at the system level, a lower level expression that describes a characteristic of one said PLL's basic building blocks;
constructing a geometric problem with the lower level expression;
and

solving the geometric problem to generate the more detailed description of the phase lock loop system, the more detailed description of the phase lock loop system comprising a transistor-level netlist.

(Claim 1 as amended; emphasis added)

It is respectfully submitted that claim 1 as amended is directed to statutory subject matter for the following reason.

The focus of analyzing whether a claim is directed to statutory subject matter under § 101 should be on whether the invention, **as a whole**, produces a **useful, concrete, and tangible result**. *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1359-1361 (Fed. Cir. 1999) (emphasis added). The Federal Circuit further explained that the inquiry simply requires an examination of the contested claims to see if the claimed subject matter **as a whole** is a disembodied mathematical concept representing nothing more than a “law of nature” or an “abstract idea,” or if the mathematical concept has been reduced to some **practical application** rendering it “**useful**.” *AT&T Corp.*, at 1357.

To be “useful” under § 101, the utility has to be “specific,” “substantial,” and “credible.” MPEP § 2107 II (A)(3). That is, the claimed invention is useful if the claimed invention has a particular **practical purpose**. In other words, this requirement excludes “throw-away,” “insubstantial,” or “nonspecific” utilities, such as the use of a complex invention as landfill. Further, credibility is assessed from the perspective of one of ordinary skill in the art in view of the disclosure and any other evidence of record. MPEP § 2107 II (B)(1).

In addition to being useful, the claimed invention as a whole has to produce a tangible result. For a process claim to produce a tangible result, the process claim must set forth a practical application to produce a ***real-world result***. *Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972) (emphasis added).

Furthermore, the claimed invention as a whole has to produce a concrete result. In other words, the process must have a result that can be ***substantially repeatable*** or the process must substantially produce the same result again. *In re Swartz*, 232 F.3d 862, 864 (Fed. Cir. 2000) (emphasis added).

The current invention as claimed is related to automating the design of phase lock loop systems. It is well known that phase lock loop systems are widely used in integrated circuit (IC) designs for various applications, such as generating clock signals. However, many phase lock loop systems are complex circuits and the design of which is difficult and time consuming. Automating the design of phase lock loop systems may alleviate circuit designers of this difficult task and allow the circuit designers to direct their time and resources towards other areas in IC designs. Thus, the automation of the design of phase lock loop systems has a ***practical purpose***. Therefore, the invention as claimed is useful under the guidelines in MPEP § 2107 II (B)(1) as set forth above.

Further, the method as recited in claim 1 produces a tangible result because the method produces the real-world result of a more detailed description of the phase lock loop system, which comprises a transistor-level netlist. The transistor-level netlist is a representation of the phase lock loop system, which is a tangible physical article in the real world. Based on the

transistor-level netlist, circuit designers can build the phase lock loop system designed by the method as claimed. Thus, claim 1 as amended produces a tangible result under current case law. *Gottschalk v. Benson*, at 71-72.

Finally, the method as claimed is substantially repeatable because the more detailed description of the phase lock loop system is generated by solving the geometric problem. The more detailed description of the phase lock loop system is not generated randomly. Therefore, the description of the phase lock loop system generated according to the method as claimed is substantially repeatable. According to the teaching of Federal Circuit, the method as claimed produces a concrete result because the result (i.e., the more detailed description of the phase lock loop system) is substantially repeatable. *In re Swartz*, at 864.

In sum, claim 1, **as a whole**, produces a **useful, concrete, and tangible result**. Thus, claim 1 is directed to statutory subject matter under § 101 under current case law. Withdrawal of the rejection is respectfully requested.

For the reason discussed above with respect to claim 1, claim 5 as amended is also directed to statutory subject matter under § 101. Claims 2-3 and 6-7 depend, directly or indirectly, from claims 1 and 5, respectively, and thus, are directed to statutory subject matter under § 101 for at least the reason discussed above with respect to claim 1. Withdrawal of the rejection is respectfully requested.

Rejections under 35 USC § 112

In the Office Action mailed on 9/29/2006, the Examiner rejected claims 1-8 under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Specifically, the Office Action argued that “[a]ll possible models for all possible past, present and future basic building blocks are covered by the claims but not enabled by the specification” (Office Action, p. 6, lines 1-3). Applicant respectfully traverses the rejection.

Any analysis of whether a particular claim is supported by the disclosure in an application requires a determination of whether that disclosure, when filed, contained sufficient information regarding the subject matter of the claims as to enable one skilled in the pertinent art to make and use the claimed invention. The standard for determining whether the specification meets the enablement requirement was cast in the Supreme Court decision of *Mineral Separation v. Hyde*, 242 U.S. 261, 270 (1916) which postured the question: is the experimentation needed to practice the invention undue or unreasonable? That standard is still the one to be applied. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988). See also MPEP § 2164.01.

There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is "undue." These factors include, but are not limited to:

- (A) The breadth of the claims;
- (B) The nature of the invention;
- (C) The state of the prior art;
- (D) The level of one of ordinary skill;
- (E) The level of predictability in the art;
- (F) The amount of direction provided by the inventor;
- (G) The existence of working examples; and
- (H) The quantity of experimentation needed to make or use the invention based on the content of the disclosure.

It is improper to conclude that a disclosure is not enabling based on an analysis of only one of the above factors while ignoring one or more of the others. The examiner's analysis must consider all the evidence related to each of these factors, and any conclusion of non-enablement must be based on the evidence as a whole. 858 F.2d at 737, 740, 8 USPQ2d at 1404, 1407. MPEP § 2164.01(a).

Referring back to the current application, the claims as they current stand meets the enablement standard set forth above for at least the following reason. Claim 1 recites: "substituting, into a monomial or posynomial equation that is part of a family of monomial and posynomial expressions that describe functional characteristics of said PLL at the system level, a lower level expression that describes a characteristic of one of said PLL's basic building blocks;" (Claim 1, lines 3-7). Note that claim 1 does not recite "basic building blocks" in the abstract. Rather, claim 1 specifies substituting a lower level expression that describes *a characteristic of one of said PLL's basic building blocks* into a monomial or posynomial equation that is part of a family of

monomial and posynomial expressions that describe functional characteristics of said PLL at the system level.

Further, the specification provides description and examples on the substitution of lower level expression that describes *a characteristic of one of said PLL's basic building blocks* into a monomial or posynomial equation that is part of a family of monomial and posynomial expressions that describe functional characteristics of said PLL at the system level, such as Figures 5A-5B and 6A-6B. Thus, the amount of direction provided by the Applicant is ample in the current application.

Further, a person of ordinary skill in the relevant art, i.e., electronic design automation, has at least attained college education in electrical engineering and/or computer engineering and working experience in electronic design automation. It is respectfully submitted that such a person would have been able to code, or cause to be coded, software, to substitute a lower level expression that describes *a characteristic of one of said PLL's basic building blocks* into a monomial or posynomial equation that is part of a family of monomial and posynomial expressions that describe functional characteristics of said PLL at the system level based on the description and examples in the specification.

In other words, given the ample direction in the specification, one of ordinary skill in the art would not have to perform undue experimentation in order to substitute lower level expression that describes *a characteristic of one of said PLL's basic building blocks* into a monomial or posynomial equation that is part of a family of monomial and posynomial expressions that describe functional characteristics of said PLL at the system level. Therefore, claim 1

meets the enablement requirement under §112, first paragraph. Withdrawal of the rejection is respectfully requested.

Note that with sufficient explanation and/or examples in the specification, one of ordinary skill in the art would be enabled to practice the invention. Contrary to the argument in the Office Action (Office Action, p. 6, lines 1-5), it is not necessary to describe ***all possible past, present and future*** basic building blocks in the specification in order to enable one of ordinary skill in the art to practice the invention.

For the reason discussed above with respect to claim 1, claims 2-3 and 5-7 comply with the enablement requirement. Withdrawal of the rejection is respectfully requested.

Rejections under 35 USC § 102(b)

In the Office Action mailed on 9/29/2006, the Examiner rejected claims 1-8 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,973,524 to Martin (hereinafter "Martin"). See, Examiner's Office action mailed 9/29/2006, pp. 6. Applicant respectfully traverses the rejection.

Claim 1 as amended sets forth "constructing a geometric problem with the lower level expression." In contrast, Martin fails to disclose at least this limitation. In fact, Martin does not even mention geometric problem in its disclosure, let alone constructing a geometric problem with lower level expression. Therefore, Martin fails to anticipate claim 1 as amended. Withdrawal of the rejection is respectfully requested.

For the reason discussed above with respect to claim 1, claim 5 is not anticipated by Martin. Claims 2-3 and 6-7 depend, directly or indirectly, from claims 1 and 5, respectively, and thus, are not anticipated by Martin. Withdrawal of the rejection is respectfully requested.

In the Office Action mailed on 9/29/2006, the Examiner rejected claims 1-8 under 35 U.S.C. 102(b) as being anticipated by Chan, "Analysis of Linear Networks and Systems, "hereinafter "Chan"). See, Examiner's Office action mailed 9/29/2006, pp. 7. Applicant respectfully traverses the rejection.

As discussed above, claim 1 as amended sets forth "constructing a geometric problem with the lower level expression." In contrast, Chan fails to disclose at least this limitation. In fact, Chan merely discusses the application of Kirchoff's voltage law (KVL) as applied to electric circuits. Chan does not

disclose constructing a geometric problem with lower level expression.

Therefore, Chan fails to anticipate claim 1 as amended. Withdrawal of the rejection is respectfully requested.

For the reason discussed above with respect to claim 1, claim 5 is not anticipated by Chan. Claims 2-3 and 6-7 depend, directly or indirectly, from claims 1 and 5, respectively, and thus, are not anticipated by Chan. Withdrawal of the rejection is respectfully requested.

Rejections under 35 USC § 103(a)

In the Office Action mailed on 9/29/2006, the Examiner rejected claims 1-8 under 35 U.S.C. §103(a) as being unpatentable by Martin in view of Chan. Applicant respectfully traverses the rejection. As explained above, neither Martin nor Chan, alone or in combination, teaches constructing a geometric problem with the lower level expression. Since the references cited, alone or in combination, fail to teach every limitation set forth in claim 1, claim 1 is patentable over Martin in view of Chan. Withdrawal of the rejection is respectfully requested.

For the reason discussed above with respect to claim 1, claim 5 is patentable over Martin in view of Chan. Claims 2-3 and 6-7 depend, directly or indirectly, from claims 1 and 5, respectively, and thus, are patentable over Martin in view of Chan. Withdrawal of the rejection is respectfully requested.

CONCLUSION

Applicant respectfully submits that all objections and rejections have been overcome and that all pending claims are in condition for allowance.


If a telephone conference would facilitate the allowance of this application, the Examiner is invited to contact the undersigned at (408) 720-8300.

Pursuant to 37 C.F.R. 1.136(a)(3), Applicant hereby requests and authorizes the U.S. Patent and Trademark Office to (1) treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time and (2) charge all required fees, including extension of time fees and fees under 37 C.F.R. 1.16 and 1.17, to Deposit Account No. 02-2666.

Respectfully Submitted,

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